

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

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*Ex parte* PETER DANIEL HANSEN AND BULENT GOKSEL

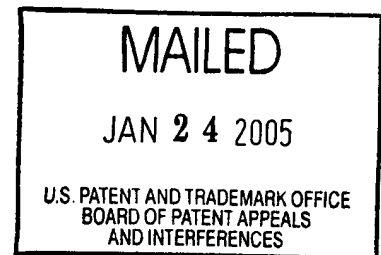
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Appeal No. 2004-1090  
Application No. 09/503,508

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HEARD: January 11, 2005

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Before THOMAS, BARRY, and SAADAT, *Administrative Patent Judges*.

BARRY, *Administrative Patent Judge*.

**DECISION ON APPEAL**

A patent examiner rejected claims 1-15. The appellants appeal therefrom under 35 U.S.C. § 134(a). We reverse.

**BACKGROUND**

The invention at issue on appeal uses a "valve positioner" to control the flow of liquid or gas through a valve. A valve positioner system controls the position of a valve in response to a signal. In a chemical mixing process, for example, such a system regulates flow to control a concentration of a particular chemical in the mixing

process. A chemical mixing process controller monitors the concentrations of all chemicals in the mix and provides signals to various valve positioners that control the flow of the chemicals. (Spec. at 1.)

The appellants' valve positioner system includes a valve flow modulating member that defines an area through which fluid flows along a flow line, a valve stem coupled to the member, and an electric actuator that controls the member via the valve stem. A force or torque generated by the actuator changes a position of the valve stem, which moves the member, thus adjusting the area of fluid flow. (Appeal Br. at 1.)

Their system also includes a valve positioner and a position sensor. The position sensor is coupled to the valve stem to measure its position. The valve positioner compares a desired valve for the position of the stem to the measured position and adjusts pressure in the actuator until the measured position matches the desired valve. (*Id.* at 2.)

A further understanding of the invention can be achieved by reading the following claim.

1. An open loop method of controlling flow rate of a fluid through a valve flow modulating member that is controlled by a position of a valve stem, the method comprising:

setting a target flow rate;

determining a target valve stem position based on the target flow rate; and

adjusting the valve stem position until a position of the valve stem matches the target valve stem position.

Claims 1-15 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 5,251,148 ("Haines").

#### OPINION

Rather than reiterate the positions of the examiner or the appellants *in toto*, we focus on the main point of contention therebetween. The examiner "refers to column 7, line 58 to column 8, line 2, wherein Haines teaches the setting of a flow rate, determining the valve position to achieve the desired flow rate and the adjusting of the valve as necessary to reach the desired results." (Examiner's Answer at 4.) The appellants argue, "although Haines uses calculated flow rates in the analysis, the

calculated flow rates are used to determine a target flow rate, and not a target position." (Appeal Br. at 5.) They further argue, "[m]oreover, the passage identified by the Examiner merely describes adjustment of the valve stem position until a flow rate matches a target flow rate, that is, 'to change the flow rate and thus bring it closer to a predetermined desired flow rate value.' See Haines at col. 7, lines 60-64 and col. 8, lines 47-51." (*Id.* at 6.)

In addressing the point of contention, the Board conducts a two-step analysis. First, we construe a claim at issue to determine its scope. Second, we determine whether the construed claim is anticipated.

#### 1. CLAIM CONSTRUCTION

"Analysis begins with a key legal question — *what* is the invention *claimed*?" *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1567, 1 USPQ2d 1593, 1597 (Fed. Cir. 1987). In answering the question, "[t]he Patent and Trademark Office (PTO) must consider all claim limitations when determining patentability of an invention over the prior art." *In re Lowry*, 32 F.3d 1579, 1582, 32 USPQ2d 1021, 1034 (Fed. Cir. 1994) (citing *In re Gulack*, 703 F.2d 1381, 1385, 217 USPQ 401, 403-04 (Fed. Cir. 1983)).

Here, claim 1 recites in pertinent part the following limitations: "determining a target valve stem position based on the target flow rate; and adjusting the valve stem position until a position of the valve stem matches the target valve stem position."

Considering these limitations, the claim requires using a desired flow rate to calculate the desired (target) position of a valve stem and then adjusting the actual position of the valve stem to match the desired (target) position.

## 2. ANTICIPATION DETERMINATION

"Having construed the claim limitations at issue, we now compare the claims to the prior art to determine if the prior art anticipates those claims." *In re Cruciferous Sprout Litig.*, 301 F.3d 1343, 1349, 64 USPQ2d 1202, 1206 (Fed. Cir. 2002). "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (citing *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 715, 223 USPQ 1264, 1270 (Fed. Cir. 1984); *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548, 220 USPQ 193, 198 (Fed. Cir. 1983); *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 771, 218 USPQ 781, 789 (Fed. Cir. 1983)). "[A]bsence from the reference of any claimed

element negates anticipation." *Kloster Speedsteel AB v. Crucible, Inc.*, 793 F.2d 1565, 1571, 230 USPQ 81, 84 (Fed. Cir. 1986).

Here, Haines "provide[s] an integrated process control valve which may be adapted to measure flow rate through the valve. . . ." Col. 2, ll. 19-21. "The valve includes a valve body 4 having an inlet 8, an outlet 12, and a fluid flow passage 16 connecting the inlet and outlet." Col. 3, ll. 42-47. "Formed centrally in the valve body 4 is a central opening 20 circumscribed by a valve seat 24 for receiving a valve plug 28. The valve plug 28 is coupled to the lower end of a valve stem 32 which extends upwardly and out of the valve body 4 to a location within a cylinder 36 which is part of an actuator 40 disposed on the top of the valve body." *Id.* at ll. 47-51.

Figure 5 of the reference "shows a flow chart of a program which may be implemented on [a] controller 120 for calculating the flow rate of liquid in the valve body 4." Col. 7, ll. 12-14. Although the reference uses a desired flow rate and adjusts the position of a valve stem, we are unpersuaded that it uses the desired flow rate to calculate a desired (target) position of a valve stem *a priori* and then adjusts the actual position of the valve stem to match the desired (target) position. To the contrary, the passage of Haines cited by the examiner discloses that a "calculated flow rate may . . .

be used . . . to provide an indication to the controller as to which direction the valve plug must be moved to change the flow rate and thus bring it closer to a predetermined desired flow rate value." Col. 7, ll. 57-63. More specifically, the "controller . . . develop[s] the appropriate signal for supply to the valve positioner to cause the valve positioner to change the position of the valve plug, after which measurements and calculations to obtain the flow rate would again be made. This process would be repeated until the desired flow rate were achieved." Col. 7, l. 63 - col. 8, l. 2. In summary, whereas the claim calculates the desired (target) position of a valve stem *a priori* and then adjusts the actual position of the valve stem to match the desired (target) position, the reference adjusts the actual position of a valve stem to achieve a desired flow rate.

The absence of using a desired flow rate to calculate the desired (target) position of a valve stem and then adjusting the actual position of the valve stem to match the desired (target) position negates anticipation. Therefore, we reverse the anticipation rejection of claim 1 and of claims 2-15, which depend therefrom.

#### ADDITIONAL OBSERVATIONS

Three issues of antecedent basis that were discussed during the appellants' hearing bear repeating here. First, we expressed uncertainty as to whether the

limitation of "a valve stem position" in claim 2 referred to the "target valve stem position" or to "the [actual] valve step position" of claim 1. The appellants' attorney explained that "a valve stem position" referred to the former limitation of claim 1 and offered to amend claim 2 to clarify the reference. Second, she explained that the limitation of "the flow area" in claim 4 referred to "the calculated flow area" in claim 2 and offered to amend claim 4 to clarify the reference. Third, the appellants' attorney explained that the limitation of "the flow rate" in claim 5 referred to "the target flow rate" in claim 1 and offered to amend claim 5 to clarify the reference. We leave further consideration of these offered amendments to the examiner and the appellants.

#### CONCLUSION

In summary, the rejection of claims 1-15 under § 102(b) is reversed.



**JAMES D. THOMAS**  
Administrative Patent Judge

~~LANCE LEONARD BARRY~~  
~~Administrative Patent Judge~~

**MAHSHID SAADAT**  
Administrative Patent Judge

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